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ABSTRACT

This article provides a brief introduction to learning organization and systems thinking. It contains three experiential learning activities designed to teach systems thinking concepts. The first activity, "Pellets," helps learners discover the advantages of applying systems thinking to the solutions of workplace problems. The next two activities, "A Mazing Systems" and "Better Solutions Incorporated," provide participants opportunities to develop and test their own systems. Each activity provides specific step-by-step instructions, case studies, and debriefing questions. The article contains 43 references. (Author/KC)

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Abstract

The article provides a brief introduction to learning organization and systems thinking. It contains three experiential learning activities designed to teach system thinking concepts. The first activity, *Pellets*, helps learners discover the advantages of applying systems thinking to the solutions of workplace problems. The next two activities, *A Mazing Systems* and *Better Solutions Incorporated* provide participants opportunities to develop and test their own systems. Each activity is complete with specific step-by-step instructions, case studies, and debriefing questions. Article includes a two-page reference list.

Thinking Systems: The First Step To Becoming A Learning Organization

by

James J. Kirk Ed. D. and Stephen Huff

The challenges that face today's organizations are many and varied. They include improving the quality of goods and services, increasing productivity, integrating new technologies, becoming more competitive, and managing a highly diverse workforce. To meet these as well other challenges, companies, charitable organizations, government agencies, and educational institutions must work both "harder" and "smarter." Working harder often entails applying a little more effort or staying on the job a few more hours. Working smarter requires more complex changes in individual and organization behavior. For Peter Senge, the author The Fifth Discipline: The Art and Practice of the Learning Organization, working smarter requires an organization to become a new kind of organization. He refers to this new kind of organization as a "learning organization."

According to Senge any organization that is committed to a continuous cycle of learning and improvement can be considered a learning organization. He and many other organization development specialists believe the process of continuous improvement produces a climate in which both individual and group learning is greatly accelerated. In learning organization a great amount of learning is accomplished by continually questioning and studying "what is going on here." The resulting new knowledge is tested and applied throughout the company.

Senge holds that learning organizations develop through the exercise of five specific disciplines-Personal Mastery, Mental Models, Shared Vision, Team Learning, and Systems Thinking. The following three exercises (Pellets, A Mazing Systems, Best Solutions Incorporated) focus on the discipline, systems thinking. They are designed to help facilitators and trainers introduce the concept of systems thinking to their company, school, or agency. As their organizations begin to apply systems thinking, trainers will find each employee becoming increasingly able to comprehend the big picture. The interrelatedness of the organization will come into sharper focus (e.g., the part each element and process plays in producing the final service or product). As the big picture continues to develop over time both individuals and teams will be better able to see how their own contributions (i.e., piece of the work) fits into the vision, mission, and overall operation of the organization. In time they will be able to discern what changes are needed in the system, how a given change will effect other elements and processes, and how a proposed change might contribute to the achievement of organization goals.

The exercises below require facilitators to have an understanding of four important terms-system, subsystem, element, and process. It is recommended that the reader review the definitions of these concepts prior to using any of the activities.

System An entity which behaves or operates as a whole due to the interdependence of its various components. The United States Government and the human body are examples of systems.

Subsystem An entity within a larger system which operates as a hole due to the interdependence of its various components. The United States Armed Services and the human body's respiratory system are examples of subsystems.

Element An essential part of a system. The three branches of the government (i.e., Executive, Legislative, and Judicial) are elements of the United States Government. The heart, liver, and kidneys are elements of the human body.

Process A series of events or activities which produce a particular result, product, or service. The passage of a bill into law is a process which goes on within the United States Government. The digestion of food is a process which goes on inside the human body.

Pellets

TOPIC

Taking a systems approach

LEARNING OBJECTIVE

Participants will be able to see some of the potential advantages of taking a systems approach to problem-solving

NUMBER OF PARTICIPANTS

Any number divided into groups of five players each

PLAYING TIME

12-15 minutes

REQUIRED MATERIALS

A copy of the *What Big Picture?* case study for each participant, flip chart, markers, paper, and pencils

TO PLAY

1. Introduce players to the concept of systems thinking.
2. Go over the learning objective for the activity.
3. Explain to participants that they are about to engage in an exercise that requires them to think about some of the advantages of systems thinking.
4. Pass out a copy of the case study *What Big Picture?* to each participant.
5. Go over the directions to the case study. Answer any question that arise.
6. Divide the larger group into five-member teams.
7. Provide one member in each group a pencil and piece of lined paper. She/he will serve as the group's recorder.
8. Tell participants they have 10 minutes to answer the questions to the case study. Ask recorders to write down their group's responses.
9. After 10 minutes call "time."
10. Have each group give their answers to the six questions. Record the different responses on the a flip chart. Discuss areas of agreement and disagreement.
11. On the flip chart list and briefly discuss six ways participants believe systems thinking might be encouraged at their companies.

What Big Picture?

A multi-million dollar plastics manufacturer has a plant which produces high-tech polycarbonite materials for the medical industry. The process is very up-to-date with the latest equipment and production technology.

The base material used in the process is a polycarbonite pellet. These pellets arrive from a supplier in large plastic bags. A bag is attached to a large hopper and from there enters the process. Once the pellets enter the system, they can not be removed. They are quickly processed into a hot liquid.

One day a bad batch of pellets was detected after processing had begun. The company had to scrap two shifts of finished products. The cost to the company was approximately $100,000 in materials, sales, and personnel resources.

The production manager instructed the chief engineer for technical support to "Fix the problem!" The engineer researched and priced a piece of equipment she felt would do the job. This equipment would scan the pellet material for defects before it entered the process. The cost of the equipment was $10,000, with an additional $1,200 for installation and technical support.

After presenting her information to the management team, her request was denied. When she asked why, she was told that it was cost prohibitive and if they bought her special equipment they would have to do the same for everybody else. She was frustrated but continued to work hard.

Six months later another bad batch was detected with similar losses. The production manager called the engineer into his office and wanted to know why she hadn't fixed the problem in the first place. The engineer tried to explain what had happened, but to no avail. The next day she resigned from the company and went to work for the competition.

1. In terms of organization processes, what is the problem presented in the case study?
2. What solution was offered for the problem?
3. Was the solution offered a good one? Why or why not?
4. What actions were taken to solve the problem?
5. What was the result of the actions taken?
6. If the production manager had taken a systems approach to solving the pellet problem, what steps would have been taken? What elements or processes in the organization would have been examined. How might the outcomes of the production manager's decision been different?

A Mazing Systems

TOPIC

Developing organization processes and subsystems

LEARNING OBJECTIVE

Participants will be able to recognize the need for developing organization subsystems and processes

NUMBER OF PARTICIPANTS

10 to 20 participants divided into two teams of equal numbers

PLAYING TIME

30-40 minutes

REQUIRED MATERIALS

A large room, copies of the *Organization Maze* and two large rolls of masking tape

TO PLAY

1. Introduce players to the concept of subsystems and processes. Give examples of subsystems (e.g., human resources, operations, leadership) and processes (e.g., employee selection, quality management, strategic planning) found in most organizations.
2. Go over the learning objective for the activity.
3. Explain to participants that they are going to engage in an exercise which requires them to negotiate a maze in the least amount of time possible.
4. Distribute a copy of *Organization Maze* to each player.
5. Go over the directions for the activity. Answer any questions that arise.
6. If the group is larger than 12, divide it into two teams of 5-10 members each.
7. Give participants 15 minutes to plan their negotiation of the maze.
8. After 10 minutes call "time." Collect copies of the *Organization Maze* and give the first group 10 minutes to negotiate the maze.
9. Likewise, give additional groups 10 minutes to negotiate the maze.
10. After all groups have had an opportunity to negotiate the maze, debrief participants by discussing the *Debriefing Questions* below.

Debriefing Questions

1. Who was appointed the leader of the group? Why?
2. Did the leader's leadership style change during the exercise? Why or why not?
3. Which of your systems worked as planned (i.e., leadership, communications, organization memory, contingency planning, crisis management)?
4. Which of your systems did not work as planned (i.e., leadership, communications, organization memory, contingency planning, crisis management)? Why not?
5. How did the 80/20 rule apply to this exercise (i.e., did your team spend at least 80% of their time on the tasks that most directly impacted upon the outcome of the exercise)?
6. Did your team learn as much from its mistakes as they did from their successes? Explain!

Organization Maze

The Organizational Maze is an obstacle course consisting of fifty-four one foot squares laid out in a 6 x 9 foot grid (see Organization Maze diagram). Each square is marked off with masking tape. Some of the squares contain land mines (see squares on Organization Maze diagram containing clock symbols). Place two liter plastic Coke bottles upside down in these squares to simulate mines. The mines represents major setbacks in the life of an organization.

The object of the game is for teams to walk the designated path (indicated by the pointing arrows) through the entire maze as a team (i.e., with members holding hands) without knocking over any mines. Each team member must step inside each square in the correct sequence. All copies the Organization Maze diagram are collected just prior to beginning the Implementation stage of the exercise. Teams are thus required to negotiate the maze from their collective memory. While team members are permitted to communicate with one another, no verbal communication is allowed. If a team breaks hand contact with another or any member steps onto the wrong square, knocks over a mine, or verbally communicates with another member, the entire team must start their journey through the maze anew beginning at the start position. The facilitator is responsible for seeing that all of the rules of the exercise are enforced.

The activity is divided into two stages, a Planning and an Implementation stage. Teams have 15 minutes for the Planning stage and 20 minutes for the Implementation stage. During the Planning stage teams select a leader, attempt to collectively memorize their path through the maze, decide on some nonverbal system of communicating, plan an overall general strategy for negotiating the maze, and plan for contingencies. During the second stage of the activity, Implementation stage, teams attempt to travel through the maze as rapidly as possible.

Organization Maze Solution

→ 16	↓ 17	→ 30	↓ 31	↑ Finish 54	← 53	← 52	← 51	← 50
↑ 15	↓ 18	↑ 29	↘ 32	→ 33	→ 34	↘ 35	→ 48	↑ 49
↑ 14	↓ 19	↖ 28	→ 4	→ 5	↓ 6	↓ 36	↑ 47	← 46
↑ 13	↘ 20	↗ 3	↖ 27	↙ 8	← 7	↓ 37	→ 44	↑ 45
↖ 12	↗ 2	↘ 21	↙ 9	↖ 26	← 25	↓ 38	↑ 43	← 42
↗ Start 1	↖ 11	← 10	→ 22	→ 23	↑ 24	↘ 39	→ 40	↑ 41

Best Solutions Incorporated

TOPIC Designing and testing systems

LEARNING OBJECTIVE Participants will be able to design systems and/or processes for a service industry

NUMBER OF PARTICIPANTS 8 to 24 participants divided into groups of eight members each

PLAYING TIME 40-50 minutes

REQUIRED MATERIALS Copies of the *Best Solutions Incorporated Scenario*, *Four Factor System*, flip chart, markers, writing paper, and pencils

TO PLAY

1. Introduce players to or review the concepts of system, subsystem, element, and process.
2. Go over the learning objective for the activity.
3. Explain to participants that they will be involved in an activity in which they are to play the roles of focus group members which have been hired to create and then test the feasibility of a new system. During the brief role play and simulation participants will specifically act out either the role of company employee or customer.
4. Pass out copies of the *Best Solutions Incorporated Scenario*.
5. Give participants two minutes to read over the scenario and answer any questions that arise.
6. Divide the large group into focus groups of eight members each. Assign two members of each focus group the role of customers and remaining six members the role of company employees.
7. Give a sheet of paper and a pencil to each customer. Ask customers to write down an everyday problem occurring at work, home, church, the grocery store, golf course, or anywhere else in their lives. The problem should be a chronic problem that has here-to-fore defied solution and is the source of endless frustration.
8. While each customer is thinking of one everyday problem to present to the company employees, pass out paper, pencils and copies of the *Four Factor*

System handout to the four company employees in each focus group. Explain that their task is to create and test a system containing several elements and/or processes (e.g., problem identification, idea generation, testing, and sales). When constructed, the system must be capable of generating high quality solutions to everyday problems. They will later test their systems by using them to solve problems provided them by customers in their focus group. The *Four Factor System* handout can be used as general model for creating the new system.

9. Provide customers and employees 15-20 minutes to write down their everyday problems and create their new systems respectively.
10. After 15-20 minutes, collect problems from the two customers in each focus group and hand them to the company employees. Provide employees five minutes to read the problem statements and to interview each customer for clarification of their problems.
11. Give customers and employees 15 minutes to generate solutions to the identified problems. Working independently customers should record one best solution to their particular problem. They may generate several solutions but they must settle on one best solution. Performing the processes they designed into their systems, company employees must generate a list of 10 viable solutions for each of the two customer problems presented them. Each set of solutions should be neatly written on separate sheets of paper.
12. After 20 minutes, company employees should meet separately with each customer to present her/him written copies and verbal explanations of the 10 best solutions generated for their problem.
13. After customers fully understand the best solutions presented them, ask that they place a √ beside those solutions which they consider superior to their to own one best solution and return the list to you, the facilitator.
14. Review the best solutions to see which ones have at least two √ marks. Announce the customer groups which produced at least two solutions which were considered by customers to be superior to their own one best solution.
15. Debrief players by discussing the *Debriefing Questions* below.

Debriefing Questions

1. What steps were taken to create the new system?
2. What proved to be the most challenging aspect in creating a new system? Why?
3. How well did the newly created system work? What were its strengths? What areas needed improvement?
4. On what basis did customers decide their one best solution was better or not better than a solution offered by the company employees? Was there a built-in bias toward their own solution?
5. Give examples of how one process, element, or subsystem positively impacted another process, element, or subsystem.
6. Give examples of how one process, element, or subsystem negatively impacted another process, element, or subsystem.

Best Solutions Incorporated Scenario

Late in 1994 Larry White, a mid-level manager working for a large telecommunications company, was laid off during a massive downsizing. Larry was extremely angry about being laid off. He thought it very dumb and short-sighted of his company to lay off such a competent, loyal, and hard working employee as himself. Larry looked upon his lay-off as a mindless act. It was another piece of evidence pointing to the "dumbing of America."

As Larry began to think about what he might do to get his career back on track, many thoughts rushed through his brain. For the first time in his life he began to seriously consider starting his own business. After all, he had always wanted to work for someone intelligent. Furthermore, he never again wanted to be laid off by an "ungrateful employer."

Suddenly an idea occurred to Larry. Instead of being a victim and constantly complaining about the dumbing of America, he could take advantage of it. Yes, he could become a "hired brain." He could sell people solutions to everyday problems. He would call the company "Best Solutions Incorporated." His firm would generate 10 viable solutions to any everyday problem. He would guarantee that at least two of the solutions would be considered by clients as better than any solution they had come up with themselves. If the customer didn't agree that two of the solutions were better than their own, there would be no charge for his services.

Before plunging headlong into a new business, Larry thought it prudent to hire a firm to design and test a prototype solution production system.

Four-Factor System

Problem Identification	What is the situation for which the client wants help? What outcome or result is the customer seeking?
Idea Generation	Developing 10 viable solutions to an identified problem.
Testing Ideas	Determining if the solutions are likely to solve the clients problem (i.e., produce the desired outcome). Determining if the client is likely to view the solutions as plausible remedies to her/his problem.
Selling Ideas	Convincing the customer that two of the 10 Best Solutions offered by the company are better than the ones the client has been able to generate.

References

Argyris, C. (1982). Reasoning, learning, and action. San Francisco, CA: Jossey-Bass.

Barker, J.A. (1982). Paradigms: The business of discover the future. New York: Harper Collins Publishers, Inc.

Blake, R., and Mouton, J. (1968). Building a dynamic corporation through grid organization development. Reading, MA: Addison-Wesley.

Calfee, D.L. (1993). Get your mission statement working! Management Review, 82(1), p. 54.

Carney, R. (1997). Risk-taking behavior: Concepts, methods, and applications to smoking and drug abuse. Springfield, IL: Charles c. Thomas.

Chawla, S. & Renesch, J. (Ed.). (1994). Learning organizations: developing cultures for tomorrow's workplace. Portland: Productivity Press.

Churchill, N.C. & Lewis, V.L. (1983, May, June). The five stages of small business growth. Harvard Business Review, pp. 30-50.

Conlow, R. (1991). Excellence in management. Menlo Park, CA: Crisp Publications, Inc.

Covey, S.R. (1989). The 7 habits of highly effective people: powerful lessons in personal change. New York: Simon & Schuster.

Covey, S.R. (1990). Principle-centered leadership. New York, New York: Simon & Schuster.

Creech, B. (1994). The five pillars of TQM. New York, New York: Truman Talley Books/Plume.

Dodge, H.R. & Robbins, J.E. (1992 January). An empirical investigation of the organizational life cycle model for small business development survival. Journal of Small Business Management, 30, 27-27.

Drucker, P.F. (1974). Management. New York: Harper and Row.

Dumaine, B. (1994 October). Mr. Learning organization. Fortune, 130(8), 147-157.

Egan, G. (1994). The skilled helper (5th ed.). Pacific Grove, CA: Brook/Cole.

Gray, J. (1992). Men are from Mars, women are from Venus. New York: Harper Collins.

Hackett, D. & Martin, C.L. (1993). Facilitation skills for team leaders. Menlo Park, CA: Crisp Publishing, Inc.

Herzberg, F., Mausner, B. & Snyderman, B. (1959). The motivation to work. New York: Wiley.

Horn, R.E. & Cleaves, A. (Ed.). (1973). The guide to simulations/games for education and training. (4th ed.). Beverly Hills: SAGE Publications.

Huff, M. (1996). Huff Associates. Black Mountain, NC.

Jones, K. (1994). Imaginative events for training: a trainer's sourcebook of games, simulations, and role-play exercises. New York: McGraw-Hill, Inc.

Kelly, E.B. (1994). Memory enhancement for educators. Bloomington, IN: Phi Delta Kappa Educational Foundation.

Knowles, M. (1984). The adult learner: A neglected species (3rd ed.). Houston: Gulf.

Kolb, D.A., Rubin, L.M., & McIntyre, J.M. (1974). Organizational psychology: An experiential approach (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

Kouzes, J. & Posner, B. (1987). The leadership challenge. San Francisco, CA: Jossey-Bass.

Krohe, J.Jr. (1995). Do your really need a mission statement? Across the Board, 32(7), P.6.

Lewin, K. (1995). Field theory in social science. New York: Harper.

Mastropieri, M.A. & Scruggs, T.. (1991). Teaching students ways to remember: Strategies for learning mnemonically. Cambridge, M.A.: Brookline Books.

McGough, E. (1974). Your silent language. New York: William Morrow and Company.

Mintzberg, H., (1984). Power and organization life cycles. Academy of Management Review, 9, 207-224.

Moskowitz, M., Levering, R., & Katz, M. (Eds.) (1990). Everybody's business: A field guide to 400 leading companies in America. New York: Currency/Doubleday.

Orsburn, J., Morgan, L., Musselwhite, E., & Zenger, J. (1990). Self-Directed work teams. Chicago, IL: Business One Irwin.

Pedler, M., Burgoyne, J., & Boydel, T. (1991). The learning company: a strategy for sustainable development. Berkshire, England: McGraw-Hill Book Company Europe.

Rothwell, W.J., & Scrdl, Henry J. (1992). The ASTD reference guide to professional human resource development roles & competencies (Vol. I & II, 2nd ed.) Amherst, MA: HRD Press.

Senge, P. (1990). The fifth discipline. New York: Doubleday/Currency.

Senge, P,.M., Kleiner, A., Roberts, C., Ross, R.B., & Smith, B.J. (1994). The fifth discipline fieldbook: strategies and tools and building a learning organization. New York: Double day Publications.

Slavin, R.E. (1983). Cooperative learning. New York: Longman, Inc.

Slavin, R.E. (1998). Student Team learning: an overview and practical guide. Washington, D.C.: National Education Association of the United States.

Smith, C.L. (1992, February). The human side of business. Training, 29(2), 37-40.

Spenbdolini, M. (1992). The benchmarking book. New York: AMACOM.

Tannen, D. (1990). You just don't understand: Women and men in conversation. New York: Ballantine Books.

Weisbord, M. (1976). Organizational designs: Six places to look for trouble with or without a theory. Group an Organization Studies, 1, 430-447.

Whetten, D.A. & Cameron, K.S. (1995). Developing management skills (3rd ed.). New York: Harper Collins College Publishers.